



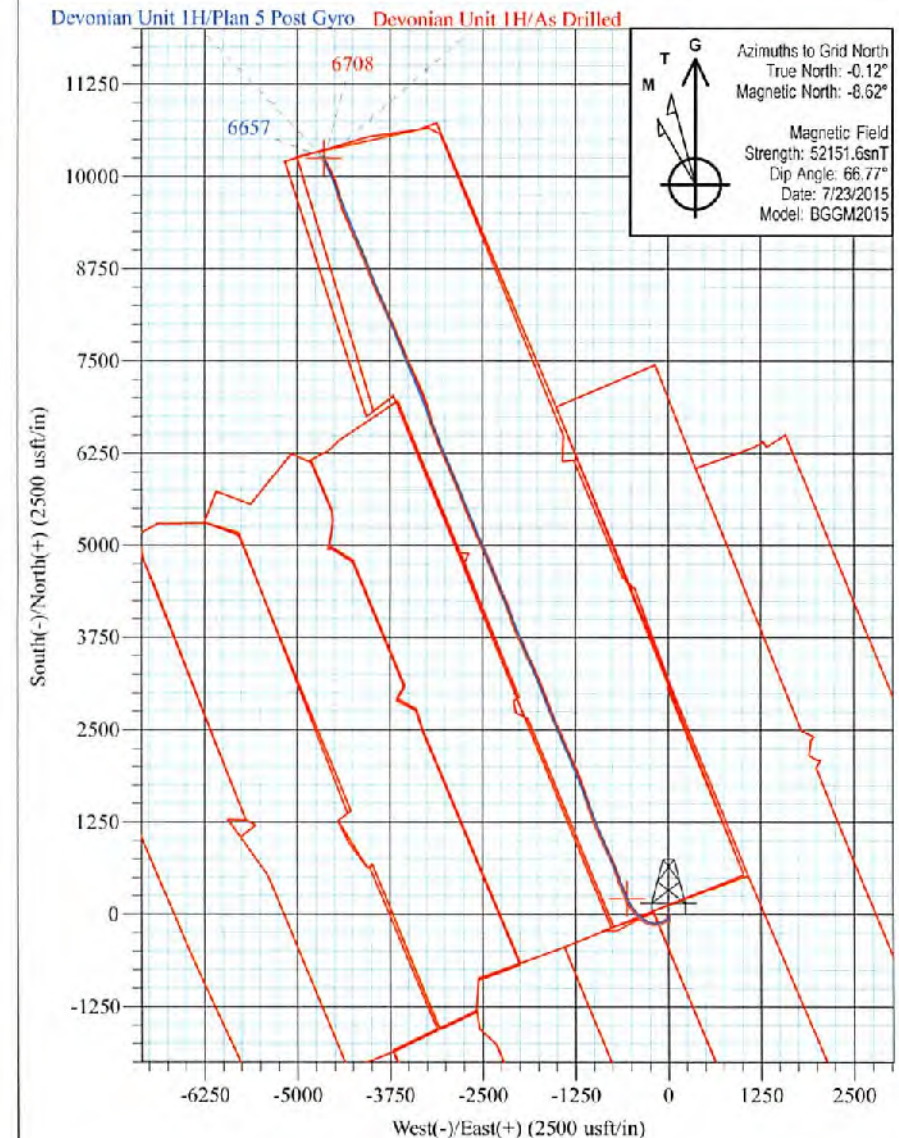
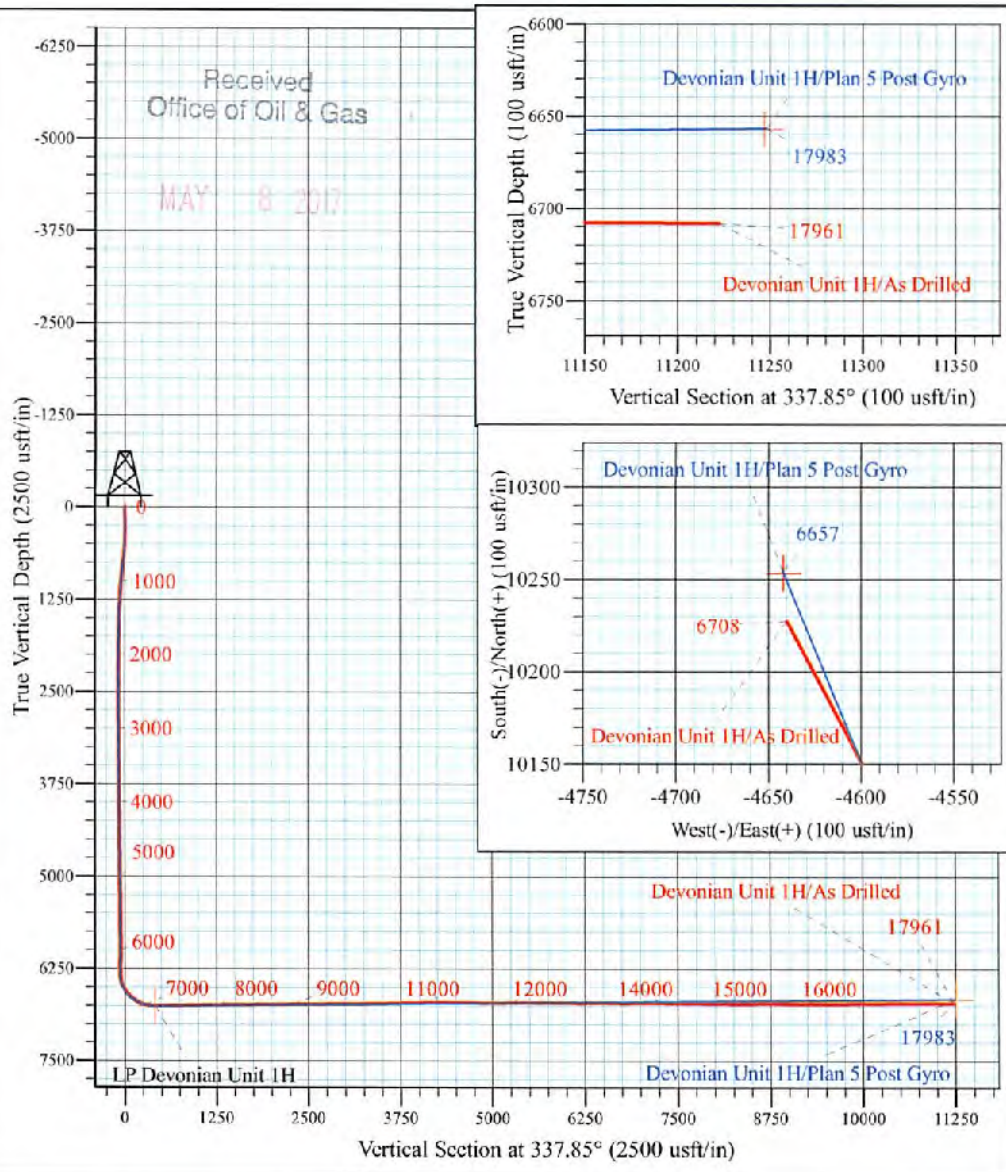
Rock Run Pad:Wentz/Twyford/Devonian
 Devonian Unit 1H
 Plan 5 Post Gyro
 Patterson 347: GL 1171' + KB 25' @ 1196.0usft
 Doddridge County WV

PROJECT DETAILS:
 Geodetic System: Universal Transverse Mercator (US Survey Feet)
 Datum: NAD 1927 (NADCON CONUS)
 Ellipsoid: Clarke 1866
 Zone: Zone 17N (84 W to 78 W)
 System Datum: Mean Sea Level



WELL DETAILS: **Devonian Unit 1H SHL**

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.0	0.0	14272993.13	1692793.41	39° 18' 17.534 N	80° 48' 53.434 W



Devonian Unit 1H
 Approx. BHL
 39° 19' 58.750 N 80° 49' 52.241 W

Shane Rhodes
 13:37, August 19 2015
 Scientific Drilling International
 124 Vista Drive
 Charleroi, PA 15022



Scientific Drilling International
Survey Report



Company:	Antero	Local Co-ordinate Reference:	Well Devonian Unit 1H
Project:	Doddridge County WV	TVD Reference:	Patterson 347: GL 1171' + KB 25' @ 1196.0usft
Site:	Rock Run Pad:Wentz/Twyford/Devonian	MD Reference:	Patterson 347: GL 1171' + KB 25' @ 1196.0usft
Well:	Devonian Unit 1H	North Reference:	Grid
Wellbore:	Original Wellpath	Survey Calculation Method:	Minimum Curvature
Design:	As Drilled	Database:	Antero NE

Project	Doddridge County WV, McClellan District		
Map System:	Universal Transverse Mercator (US Survey Feet)	System Datum:	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	Zone 17N (84 W to 78 W)		

Site	Rock Run Pad:Wentz/Twyford/Devonian				
Site Position:		Northing:	14,272,893.14 usft	Latitude:	39° 18' 17.534 N
From:	Map	Easting:	1,692,783.84 usft	Longitude:	80° 48' 53.556 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.12 °

Well	Devonian Unit 1H, Marcellus					
Well Position	+N/-S	0.0 usft	Northing:	14,272,993.13 usft	Latitude:	39° 18' 17.534 N
	+E/-W	0.0 usft	Easting:	1,692,793.41 usft	Longitude:	80° 48' 53.434 W
Position Uncertainty	2.0 usft		Wellhead Elevation:	1,196.0 usft	Ground Level:	1,171.0 usft

Wellbore	Original Wellpath				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	BGGM2015	7/23/2015	-8.50	66.77	52,152

Design	As Drilled				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.0	0.0	0.0	337.65	

Survey Program	Date 8/19/2015				
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
25.0	5,881.6	Survey #7 Def Final Gyro (Original Wellpa	Standard Keeper 104	Standard Wireline Keeper ver 1.0.4	
5,881.6	17,961.0	Survey #8 MWD Surveys (Original Wellpa	SDI MWD	Scientific Drilling Intl. MWD - Standard ver 1.0.1	

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00	
25.0	0.60	339.08	25.0	0.1	0.0	0.1	2.40	2.40	0.00	
First SDI Gyro @ 25 MD										
50.0	0.53	330.77	50.0	0.3	-0.1	0.4	0.43	-0.28	-33.24	
75.0	0.47	325.87	75.0	0.5	-0.3	0.6	0.29	-0.24	-19.60	
100.0	0.29	349.65	100.0	0.7	-0.3	0.8	0.94	-0.72	95.12	
125.0	0.49	342.94	125.0	0.8	-0.4	0.9	0.82	0.80	-26.84	
150.0	0.14	283.96	150.0	1.0	-0.4	1.0	1.74	-1.40	-235.92	
175.0	0.25	333.50	175.0	1.0	-0.5	1.1	0.77	0.44	198.16	
200.0	0.19	196.54	200.0	1.0	-0.5	1.1	1.64	-0.24	-547.84	



Scientific Drilling International
Survey Report



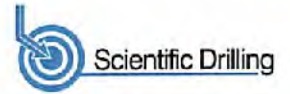
Company:	Antero	Local Co-ordinate Reference:	Well Devonian Unit 1H
Project:	Doddridge County WV	TVD Reference:	Patterson 347: GL 1171' + KB 25' @ 1196.0usft
Site:	Rock Run Pad:Wentz/Twyford/Devonian	MD Reference:	Patterson 347: GL 1171' + KB 25' @ 1196.0usft
Well:	Devonian Unit 1H	North Reference:	Grid
Wellbore:	Original Wellpath	Survey Calculation Method:	Minimum Curvature
Design:	As Drilled	Database:	Antero NE

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
225.0	0.43	335.29	225.0	1.1	-0.6	1.2	2.35	0.96	555.00	
250.0	0.09	180.44	250.0	1.1	-0.6	1.3	2.05	-1.38	-619.40	
275.0	0.11	325.47	275.0	1.1	-0.6	1.3	0.76	0.08	580.12	
300.0	0.16	331.63	300.0	1.2	-0.7	1.3	0.21	0.20	24.64	
325.0	0.20	342.16	325.0	1.3	-0.7	1.4	0.21	0.16	42.12	
350.0	0.09	333.99	350.0	1.3	-0.7	1.5	0.45	-0.44	-32.68	
375.0	0.26	227.30	375.0	1.3	-0.8	1.5	1.19	0.88	-426.76	
400.0	0.90	209.18	400.0	1.1	-0.9	1.3	2.63	2.56	-72.48	
425.0	1.81	206.91	425.0	0.6	-1.2	1.0	3.65	3.64	-9.08	
450.0	2.06	202.99	450.0	-0.2	-1.5	0.4	1.13	1.00	-15.68	
475.0	2.75	196.49	474.9	-1.2	-1.9	-0.4	2.96	2.76	-26.00	
500.0	3.27	194.59	499.9	-2.5	-2.2	-1.4	2.12	2.08	-7.60	
525.0	3.91	190.97	524.9	-4.0	-2.6	-2.7	2.71	2.56	-14.48	
550.0	4.72	184.55	549.8	-5.9	-2.8	-4.4	3.77	3.24	-25.68	
575.0	5.40	181.93	574.7	-8.1	-2.9	-6.4	2.87	2.72	-10.48	
600.0	6.29	177.98	599.6	-10.6	-2.9	-8.7	3.90	3.56	-15.80	
625.0	7.15	176.44	624.4	-13.5	-2.8	-11.5	3.51	3.44	-6.16	
650.0	7.26	175.83	649.2	-16.6	-2.6	-14.5	0.54	0.44	-2.44	
675.0	7.62	175.81	674.0	-19.9	-2.3	-17.5	1.44	1.44	-0.08	
700.0	7.78	176.19	698.8	-23.2	-2.1	-20.7	0.67	0.64	1.52	
725.0	7.65	176.03	723.5	-26.6	-1.9	-23.9	0.53	-0.52	-0.64	
750.0	7.67	176.20	748.3	-29.9	-1.6	-27.1	0.12	0.08	0.68	
775.0	7.35	176.40	773.1	-33.2	-1.4	-30.2	1.28	-1.28	0.80	
800.0	8.34	175.47	797.9	-36.1	-1.2	-33.0	4.06	-4.04	-3.72	
825.0	8.17	175.13	822.8	-38.8	-1.0	-35.6	0.70	-0.68	-1.36	
850.0	5.84	174.41	847.6	-41.4	-0.8	-38.1	1.35	-1.32	-2.88	
875.0	5.53	175.53	872.5	-43.9	-0.5	-40.5	1.32	-1.24	4.48	
900.0	5.24	175.20	897.4	-46.2	-0.4	-42.7	1.17	-1.16	-1.32	
925.0	4.74	176.54	922.3	-48.4	-0.2	-44.8	2.05	-2.00	5.36	
950.0	4.71	176.12	947.2	-50.5	-0.1	-46.7	0.18	-0.12	-1.68	
975.0	4.72	176.68	972.1	-52.5	0.1	-48.7	0.19	0.04	2.24	
1,000.0	4.48	175.40	997.1	-54.5	0.2	-50.6	1.04	-0.96	-5.12	
1,025.0	4.42	175.13	1,022.0	-56.5	0.4	-52.4	0.25	-0.24	-1.08	
1,050.0	4.23	175.31	1,046.9	-58.3	0.5	-54.2	0.76	-0.76	0.72	
1,075.0	4.38	176.44	1,071.8	-60.2	0.7	-56.0	0.69	0.60	4.52	
1,100.0	4.19	175.40	1,096.8	-62.1	0.8	-57.8	0.82	-0.76	-4.16	
1,125.0	4.00	174.44	1,121.7	-63.8	0.9	-59.5	0.81	-0.76	-3.84	
1,150.0	3.82	174.38	1,146.6	-65.5	1.1	-61.1	0.72	-0.72	-0.24	
1,175.0	3.59	174.75	1,171.6	-67.2	1.3	-62.7	0.92	-0.92	1.48	
1,200.0	3.53	173.96	1,196.5	-68.7	1.4	-64.2	0.31	-0.24	-3.16	
1,225.0	3.45	173.81	1,221.5	-70.2	1.6	-65.6	0.32	-0.32	-0.60	
1,250.0	3.30	174.22	1,246.5	-71.7	1.7	-67.0	0.61	-0.60	1.64	
1,275.0	3.15	174.86	1,271.4	-73.1	1.9	-68.4	0.62	-0.60	2.56	

Received
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Scientific Drilling International
Survey Report



Company:	Antero	Local Co-ordinate Reference:	Well Devonian Unit 1H
Project:	Doddridge County WV	TVD Reference:	Patterson 347: GL 1171' + KB 25' @ 1196.0usft
Site:	Rock Run Pad:Wentz/Twyford/Devonian	MD Reference:	Patterson 347: GL 1171' + KB 25' @ 1196.0usft
Well:	Devonian Unit 1H	North Reference:	Grid
Wellbore:	Original Wellpath	Survey Calculation Method:	Minimum Curvature
Design:	As Drilled	Database:	Antero NE

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
1,300.0	2.63	175.86	1,296.4	-74.4	2.0	-69.6	1.30	-1.28	4.00	
1,325.0	2.62	174.09	1,321.4	-75.6	2.1	-70.8	0.90	-0.84	-7.06	
1,350.0	2.52	174.34	1,346.3	-76.7	2.2	-71.8	0.40	-0.40	1.00	
1,375.0	2.60	173.23	1,371.3	-77.8	2.3	-72.9	0.38	0.32	-4.44	
1,400.0	2.39	175.50	1,396.3	-78.9	2.4	-74.0	0.93	-0.84	9.06	
1,425.0	2.23	175.82	1,421.3	-79.9	2.5	-74.9	0.64	-0.64	0.48	
1,450.0	2.04	173.42	1,446.2	-80.8	2.6	-75.8	0.83	-0.76	-8.80	
1,475.0	1.98	175.32	1,471.2	-81.7	2.7	-76.6	0.36	-0.24	7.60	
1,500.0	1.74	176.95	1,496.2	-82.5	2.7	-77.4	0.96	-0.86	6.52	
1,525.0	1.88	178.28	1,521.2	-83.3	2.8	-78.2	0.57	0.56	-2.68	
1,550.0	1.66	173.13	1,546.2	-84.0	2.8	-78.9	0.96	-0.88	-12.60	
1,575.0	1.54	172.62	1,571.2	-84.7	2.9	-79.6	0.48	-0.48	-2.04	
1,600.0	1.37	176.36	1,596.2	-85.4	3.0	-80.2	0.78	-0.88	14.96	
1,625.0	1.34	174.32	1,621.2	-85.9	3.0	-80.8	0.23	-0.12	-8.16	
1,650.0	1.24	174.61	1,646.2	-86.5	3.1	-81.3	0.40	-0.40	1.16	
1,675.0	1.09	173.87	1,671.2	-87.0	3.1	-81.8	0.60	-0.60	-2.96	
1,700.0	0.92	171.08	1,696.1	-87.4	3.2	-82.2	0.71	-0.68	-11.16	
1,725.0	0.85	172.57	1,721.1	-87.8	3.3	-82.6	0.29	-0.28	5.96	
1,750.0	0.87	175.47	1,746.1	-88.2	3.3	-82.9	0.19	0.08	11.60	
1,775.0	0.86	168.35	1,771.1	-88.6	3.3	-83.3	0.43	-0.04	-28.48	
1,800.0	0.85	169.30	1,796.1	-88.9	3.4	-83.7	0.07	-0.04	3.80	
1,825.0	0.71	175.28	1,821.1	-89.3	3.5	-84.0	0.65	-0.56	23.92	
1,850.0	0.66	176.19	1,846.1	-89.6	3.5	-84.3	0.20	-0.20	3.64	
1,875.0	0.61	174.84	1,871.1	-89.9	3.5	-84.6	0.21	-0.20	-5.40	
1,900.0	0.49	179.85	1,896.1	-90.1	3.5	-84.8	0.52	-0.46	20.04	
1,925.0	0.40	163.00	1,921.1	-90.3	3.5	-85.0	0.63	-0.36	-67.40	
1,950.0	0.24	151.78	1,946.1	-90.4	3.6	-85.1	0.68	-0.64	-44.88	
1,975.0	0.36	166.57	1,971.1	-90.5	3.6	-85.2	0.57	0.46	59.16	
2,000.0	0.14	140.14	1,996.1	-90.6	3.7	-85.3	0.97	-0.86	-105.72	
2,025.0	0.19	155.81	2,021.1	-90.7	3.7	-85.4	0.27	0.20	62.68	
2,050.0	0.16	178.25	2,046.1	-90.8	3.7	-85.5	0.30	-0.12	89.76	
2,075.0	0.15	181.38	2,071.1	-90.8	3.7	-85.5	0.06	-0.04	12.52	
2,100.0	0.18	159.97	2,096.1	-90.9	3.7	-85.6	0.27	0.12	-85.64	
2,125.0	0.11	153.82	2,121.1	-91.0	3.8	-85.7	0.29	-0.26	-24.60	
2,150.0	0.25	149.41	2,146.1	-91.0	3.8	-85.8	0.56	0.56	-17.64	
2,175.0	0.14	159.46	2,171.1	-91.1	3.8	-85.8	0.46	-0.44	40.28	
2,200.0	0.16	126.33	2,196.1	-91.2	3.9	-85.9	0.35	0.06	-132.60	
2,225.0	0.19	129.29	2,221.1	-91.2	3.9	-86.0	0.13	0.12	11.84	
2,250.0	0.10	199.35	2,246.1	-91.3	4.0	-86.0	0.73	-0.36	280.24	
2,275.0	0.05	156.85	2,271.1	-91.3	4.0	-86.0	0.29	-0.20	-170.00	
2,300.0	0.02	279.15	2,296.1	-91.3	4.0	-86.1	0.25	-0.12	489.20	
2,325.0	0.08	335.16	2,321.1	-91.3	4.0	-86.0	0.28	0.24	224.04	
2,350.0	0.07	314.19	2,346.1	-91.3	3.9	-86.0	0.12	-0.04	-83.88	

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MAY 8 2017



Scientific Drilling International
Survey Report



Company:	Antero	Local Co-ordinate Reference:	Well Devonian Unit 1H
Project:	Doddridge County WV	TVD Reference:	Patterson 347: GL 1171' + KB 25' @ 1196.0usft
Site:	Rock Run Pad:Wentz/Twyford/Devonian	MD Reference:	Patterson 347: GL 1171' + KB 25' @ 1196.0usft
Well:	Devonian Unit 1H	North Reference:	Grid
Wellbore:	Original Wellpath	Survey Calculation Method:	Minimum Curvature
Design:	As Drilled	Database:	Antero NE

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
2,375.0	0.06	307.65	2,371.1	-91.2	3.9	-88.0	0.05	-0.04	-26.16	
2,400.0	0.13	355.04	2,396.1	-91.2	3.9	-85.9	0.40	0.28	189.56	
2,425.0	0.14	32.52	2,421.1	-91.1	3.9	-85.9	0.35	0.04	149.92	
2,450.0	0.14	353.58	2,446.1	-91.1	3.9	-85.8	0.37	0.00	-155.76	
2,475.0	0.11	65.40	2,471.1	-91.0	3.9	-85.8	0.59	-0.12	287.28	
2,500.0	0.14	328.61	2,496.1	-91.0	4.0	-85.8	0.75	0.12	-387.16	
2,525.0	0.21	327.69	2,521.1	-90.9	3.9	-85.7	0.28	0.28	-3.68	
2,550.0	0.13	306.57	2,546.1	-90.9	3.9	-85.6	0.40	-0.32	-84.48	
2,575.0	0.08	253.94	2,571.1	-90.9	3.8	-85.6	0.41	-0.20	-210.52	
2,600.0	0.03	354.66	2,596.1	-90.9	3.8	-85.6	0.36	-0.20	402.88	
2,625.0	0.06	332.74	2,621.1	-90.9	3.8	-85.6	0.14	0.12	-87.68	
2,650.0	0.07	332.19	2,646.1	-90.8	3.8	-85.6	0.04	0.04	-2.20	
2,675.0	0.23	322.17	2,671.1	-90.8	3.6	-85.5	0.65	0.64	-40.08	
2,700.0	0.20	339.91	2,696.1	-90.7	3.7	-85.4	0.29	-0.12	70.96	
2,725.0	0.19	0.80	2,721.1	-90.6	3.7	-85.3	0.29	-0.04	83.56	
2,750.0	0.18	15.29	2,746.1	-90.5	3.7	-85.3	0.19	-0.04	57.96	
2,775.0	0.17	5.67	2,771.1	-90.5	3.7	-85.2	0.12	-0.04	-38.48	
2,800.0	0.20	351.97	2,796.1	-90.4	3.7	-85.1	0.21	0.12	-54.80	
2,825.0	0.23	339.23	2,821.1	-90.3	3.7	-85.0	0.23	0.12	-50.96	
2,850.0	0.29	327.21	2,846.1	-90.2	3.6	-84.9	0.32	0.24	-48.08	
2,875.0	0.41	323.15	2,871.1	-90.1	3.6	-84.8	0.49	0.48	-16.24	
2,900.0	0.47	313.05	2,896.1	-89.9	3.4	-84.6	0.39	0.24	-40.40	
2,925.0	0.58	324.21	2,921.1	-89.8	3.3	-84.4	0.60	0.44	44.64	
2,950.0	0.57	320.23	2,946.1	-89.6	3.1	-84.1	0.16	-0.04	-15.92	
2,975.0	0.63	329.68	2,971.1	-89.3	3.0	-83.9	0.46	0.24	37.80	
3,000.0	0.61	314.02	2,996.1	-89.1	2.8	-83.6	0.68	-0.08	-62.64	
3,025.0	0.65	311.32	3,021.1	-88.9	2.6	-83.4	0.20	0.16	-10.80	
3,050.0	0.64	310.98	3,046.1	-88.8	2.4	-83.1	0.04	-0.04	-1.36	
3,075.0	0.67	311.97	3,071.1	-88.6	2.2	-82.9	0.13	0.12	3.96	
3,100.0	0.65	304.01	3,096.1	-88.4	2.0	-82.6	0.38	-0.08	-31.84	
3,125.0	0.63	307.75	3,121.1	-88.2	1.7	-82.4	0.19	-0.08	14.96	
3,150.0	0.66	311.43	3,146.1	-88.0	1.5	-82.1	0.20	0.12	14.72	
3,175.0	0.82	321.59	3,171.1	-87.8	1.3	-81.8	0.83	0.64	40.64	
3,200.0	0.73	313.90	3,196.1	-87.6	1.1	-81.5	0.55	-0.36	-30.76	
3,225.0	0.66	303.51	3,221.1	-87.4	0.8	-81.2	0.58	-0.28	-41.56	
3,250.0	0.66	309.65	3,246.1	-87.2	0.6	-81.0	0.28	0.00	24.56	
3,275.0	0.69	312.63	3,271.1	-87.0	0.4	-80.7	0.18	0.12	11.92	
3,300.0	0.68	308.90	3,296.1	-86.8	0.2	-80.5	0.18	-0.04	-14.92	
3,325.0	0.81	313.54	3,321.1	-86.6	-0.1	-80.2	0.57	0.52	18.56	
3,350.0	0.76	310.57	3,346.1	-86.4	-0.3	-79.9	0.26	-0.20	-11.88	
3,375.0	0.84	312.64	3,371.1	-86.1	-0.6	-79.5	0.34	0.32	8.28	
3,400.0	0.79	310.42	3,396.1	-85.9	-0.9	-79.2	0.24	-0.20	-8.88	
3,425.0	0.78	313.09	3,421.1	-85.7	-1.1	-78.9	0.15	-0.04	10.68	
3,450.0	0.71	315.61	3,446.1	-85.4	-1.4	-78.6	0.31	-0.28	10.08	

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Scientific Drilling International
Survey Report



Company:	Antero	Local Co-ordinate Reference:	Well Devonian Unit 1H
Project:	Doddridge County WV	TVD Reference:	Patterson 347: GL 1171' + KB 25' @ 1195.0usft
Site:	Rock Run Pad:Wentz/Twyford/Devonian	MD Reference:	Patterson 347: GL 1171' + KB 25' @ 1195.0usft
Well:	Devonian Unit 1H	North Reference:	Grid
Wellbore:	Original Wellpath	Survey Calculation Method:	Minimum Curvature
Design:	As Drilled	Database:	Antero NE

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
3,475.0	0.82	314.16	3,471.1	-85.2	-1.6	-78.3	0.45	0.44	-5.80	
3,500.0	0.75	310.46	3,496.1	-85.0	-1.9	-78.0	0.35	-0.26	-14.80	
3,525.0	0.79	318.78	3,521.1	-84.7	-2.1	-77.7	0.47	0.16	33.28	
3,550.0	0.80	307.80	3,546.1	-84.5	-2.3	-77.4	0.61	0.04	-43.92	
3,575.0	0.78	313.74	3,571.1	-84.3	-2.6	-77.1	0.34	-0.06	23.76	
3,600.0	0.75	314.87	3,596.1	-84.0	-2.8	-78.8	0.13	-0.12	4.52	
3,625.0	0.85	313.06	3,621.1	-83.8	-3.1	-78.5	0.41	0.40	-7.24	
3,650.0	0.73	313.81	3,646.1	-83.6	-3.3	-78.1	0.48	-0.46	3.00	
3,675.0	0.79	311.81	3,671.1	-83.3	-3.6	-75.8	0.26	0.24	-8.00	
3,700.0	0.80	311.00	3,696.1	-83.1	-3.8	-75.5	0.06	0.04	-3.24	
3,725.0	0.76	316.57	3,721.1	-82.9	-4.1	-75.2	0.34	-0.16	22.28	
3,750.0	0.69	310.97	3,746.1	-82.7	-4.3	-74.9	0.40	-0.28	-22.40	
3,775.0	0.87	316.69	3,771.1	-82.4	-4.6	-74.6	0.78	0.72	22.88	
3,800.0	0.77	313.87	3,796.1	-82.2	-4.8	-74.3	0.43	-0.40	-11.28	
3,825.0	0.73	314.05	3,821.1	-81.9	-5.1	-74.0	0.16	-0.16	0.72	
3,850.0	0.65	322.21	3,846.0	-81.7	-5.3	-73.7	0.51	-0.32	32.64	
3,875.0	0.62	328.37	3,871.0	-81.5	-5.4	-73.4	0.30	-0.12	24.64	
3,900.0	0.55	319.98	3,896.0	-81.3	-5.6	-73.2	0.44	-0.28	-33.56	
3,925.0	0.56	332.98	3,921.0	-81.1	-5.7	-73.0	0.50	0.04	52.00	
3,950.0	0.50	330.69	3,946.0	-80.9	-5.8	-72.7	0.25	-0.24	-9.16	
3,975.0	0.55	335.95	3,971.0	-80.7	-5.9	-72.5	0.28	0.20	21.04	
4,000.0	0.57	334.37	3,996.0	-80.5	-6.0	-72.3	0.10	0.08	-6.32	
4,025.0	0.39	333.86	4,021.0	-80.3	-6.1	-72.0	0.72	-0.72	-2.04	
4,050.0	0.32	330.83	4,046.0	-80.1	-6.2	-71.9	0.29	-0.28	-12.12	
4,075.0	0.42	329.33	4,071.0	-80.0	-6.2	-71.7	0.40	0.40	-6.00	
4,100.0	0.50	325.81	4,096.0	-79.8	-6.4	-71.5	0.34	0.32	-14.08	
4,125.0	0.53	326.24	4,121.0	-79.6	-6.5	-71.3	0.12	0.12	1.72	
4,150.0	0.59	328.71	4,146.0	-79.4	-6.6	-71.1	0.26	0.24	9.68	
4,175.0	0.48	335.90	4,171.0	-79.2	-6.7	-70.8	0.51	-0.44	26.76	
4,200.0	0.52	312.92	4,196.0	-79.0	-6.8	-70.6	0.81	0.16	-91.92	
4,225.0	0.48	330.35	4,221.0	-78.9	-7.0	-70.4	0.63	-0.16	69.72	
4,250.0	0.46	328.50	4,246.0	-78.7	-7.1	-70.2	0.10	-0.06	-7.40	
4,275.0	0.42	319.60	4,271.0	-78.5	-7.2	-70.0	0.32	-0.16	-35.60	
4,300.0	0.51	321.37	4,296.0	-78.4	-7.3	-69.8	0.36	0.36	7.08	
4,325.0	0.54	321.42	4,321.0	-78.2	-7.5	-69.6	0.12	0.12	0.20	
4,350.0	0.59	319.31	4,346.0	-78.0	-7.6	-69.4	0.22	0.20	-6.44	
4,375.0	0.65	316.95	4,371.0	-77.8	-7.8	-69.1	0.26	0.24	-9.44	
4,400.0	0.63	326.19	4,396.0	-77.6	-8.0	-68.9	0.42	-0.06	36.96	
4,425.0	0.50	314.97	4,421.0	-77.4	-8.1	-68.6	0.68	-0.52	-44.88	
4,450.0	0.51	324.20	4,446.0	-77.2	-8.3	-68.4	0.33	0.04	36.92	
4,475.0	0.52	327.99	4,471.0	-77.1	-8.4	-68.2	0.14	0.04	15.16	
4,500.0	0.49	326.39	4,496.0	-76.9	-8.5	-68.0	0.13	-0.12	-6.40	
4,525.0	0.48	328.18	4,521.0	-76.7	-8.6	-67.8	0.07	-0.04	7.16	

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MAY 8 2015



Scientific Drilling International
Survey Report



Company:	Antero	Local Co-ordinate Reference:	Well Devonian Unit 1H
Project:	Doddridge County WV	TVD Reference:	Patterson 347: GL 1171' + KB 25' @ 1196.0usft
Site:	Rock Run Pad:Wentz/Twyford/Devonian	MD Reference:	Patterson 347: GL 1171' + KB 25' @ 1196.0usft
Well:	Devonian Unit 1H	North Reference:	Grid
Wellbore:	Original Wellpath	Survey Calculation Method:	Minimum Curvature
Design:	As Drilled	Database:	Antero NE

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
4,550.0	0.42	327.71	4,546.0	-76.5	-8.7	-67.6	0.24	-0.24	-1.88
4,575.0	0.48	327.01	4,571.0	-76.4	-8.8	-67.4	0.24	0.24	-2.80
4,600.0	0.48	323.10	4,596.0	-76.2	-9.0	-67.2	0.13	0.00	-15.64
4,625.0	0.48	324.27	4,621.0	-76.0	-9.1	-67.0	0.04	0.00	4.68
4,650.0	0.56	318.63	4,646.0	-75.8	-9.2	-66.8	0.38	0.32	-22.56
4,675.0	0.43	338.13	4,671.0	-75.7	-9.3	-66.6	0.84	-0.52	78.00
4,700.0	0.43	332.11	4,696.0	-75.5	-9.4	-66.4	0.18	0.00	-24.08
4,725.0	0.48	327.45	4,721.0	-75.3	-9.5	-66.2	0.25	0.20	-18.64
4,750.0	0.48	327.68	4,746.0	-75.1	-9.6	-66.0	0.01	0.00	0.92
4,775.0	0.44	335.97	4,771.0	-75.0	-9.7	-65.8	0.31	-0.16	33.16
4,800.0	0.42	336.49	4,796.0	-74.8	-9.8	-65.6	0.08	-0.08	2.08
4,825.0	0.41	340.86	4,821.0	-74.6	-9.9	-65.4	0.13	-0.04	17.48
4,850.0	0.38	336.66	4,846.0	-74.5	-9.9	-65.2	0.17	-0.12	-16.80
4,875.0	0.34	325.61	4,871.0	-74.3	-10.0	-65.1	0.32	-0.16	-44.20
4,900.0	0.33	333.29	4,896.0	-74.2	-10.1	-64.9	0.18	-0.04	30.72
4,925.0	0.35	340.38	4,921.0	-74.1	-10.1	-64.8	0.19	0.06	28.36
4,950.0	0.38	340.63	4,946.0	-73.9	-10.2	-64.6	0.12	0.12	1.00
4,975.0	0.38	333.86	4,971.0	-73.8	-10.3	-64.5	0.18	0.00	-27.08
5,000.0	0.33	345.12	4,996.0	-73.6	-10.3	-64.3	0.34	-0.20	45.04
5,025.0	0.29	341.62	5,021.0	-73.5	-10.4	-64.2	0.18	-0.16	-14.00
5,050.0	0.33	339.96	5,046.0	-73.4	-10.4	-64.0	0.16	0.16	-6.64
5,075.0	0.25	343.64	5,071.0	-73.2	-10.4	-63.9	0.33	-0.32	14.72
5,100.0	0.24	352.24	5,096.0	-73.1	-10.5	-63.8	0.15	-0.04	34.40
5,125.0	0.22	339.95	5,121.0	-73.0	-10.5	-63.7	0.21	-0.08	-49.16
5,150.0	0.27	346.50	5,146.0	-72.9	-10.5	-63.6	0.23	0.20	26.20
5,175.0	0.26	344.58	5,171.0	-72.8	-10.5	-63.5	0.05	-0.04	-7.68
5,200.0	0.25	356.37	5,196.0	-72.7	-10.6	-63.4	0.21	-0.04	47.16
5,225.0	0.29	347.83	5,221.0	-72.6	-10.6	-63.3	0.23	0.16	-34.16
5,250.0	0.23	343.54	5,246.0	-72.5	-10.6	-63.1	0.25	-0.24	-17.16
5,275.0	0.28	340.99	5,271.0	-72.4	-10.6	-63.0	0.21	0.20	-10.20
5,300.0	0.27	4.57	5,296.0	-72.3	-10.7	-62.9	0.45	-0.04	94.32
5,325.0	0.23	345.98	5,321.0	-72.2	-10.7	-62.8	0.36	-0.16	-74.36
5,350.0	0.31	339.20	5,346.0	-72.1	-10.7	-62.7	0.34	0.32	-27.12
5,375.0	0.40	354.77	5,371.0	-71.9	-10.7	-62.6	0.52	0.36	62.28
5,400.0	0.32	352.71	5,396.0	-71.8	-10.8	-62.4	0.32	-0.32	-8.24
5,425.0	0.41	347.26	5,421.0	-71.6	-10.8	-62.2	0.39	0.36	-21.80
5,450.0	0.45	341.97	5,446.0	-71.4	-10.8	-62.1	0.23	0.16	-21.16
5,475.0	0.39	355.05	5,471.0	-71.2	-10.9	-61.9	0.45	-0.24	52.32
5,500.0	0.43	344.73	5,496.0	-71.1	-10.9	-61.7	0.34	0.16	-41.28
5,525.0	0.42	354.02	5,521.0	-70.9	-10.9	-61.5	0.28	-0.04	37.16
5,550.0	0.46	1.38	5,546.0	-70.7	-10.9	-61.3	0.28	0.16	29.44
5,575.0	0.51	357.74	5,571.0	-70.5	-10.9	-61.1	0.23	0.20	-14.56
5,600.0	0.47	4.61	5,596.0	-70.3	-10.9	-61.0	0.28	-0.18	27.48

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WV 8/19/15



Scientific Drilling International

Survey Report



Company:	Antero	Local Co-ordinate Reference:	Well Devonian Unit 1H
Project:	Doddridge County WV	TVD Reference:	Patterson 347: GL 1171' + KB 25' @ 1196.0usft
Site:	Rock Run Pad:Wentz/Twyford/Devonian	MD Reference:	Patterson 347: GL 1171' + KB 25' @ 1196.0usft
Well:	Devonian Unit 1H	North Reference:	Grid
Wellbore:	Original Wellpath	Survey Calculation Method:	Minimum Curvature
Design:	As Drilled	Database:	Antero NE

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
5,625.0	0.52	4.63	5,621.0	-70.0	-10.9	-60.8	0.20	0.20	0.08	
5,650.0	0.60	26.24	5,646.0	-69.8	-10.9	-60.6	0.90	0.32	86.44	
5,675.0	0.47	10.18	5,671.0	-69.6	-10.8	-60.4	0.79	-0.52	-64.24	
5,700.0	0.51	16.93	5,696.0	-69.4	-10.7	-60.2	0.28	0.16	27.00	
5,725.0	0.49	23.92	5,721.0	-69.2	-10.7	-60.1	0.26	-0.06	27.96	
5,750.0	0.49	24.12	5,746.0	-69.0	-10.6	-59.9	0.01	0.00	0.80	
5,775.0	0.56	25.04	5,771.0	-68.8	-10.5	-59.8	0.28	0.28	3.68	
5,800.0	0.51	22.70	5,796.0	-68.6	-10.4	-59.6	0.22	-0.20	-9.36	
5,825.0	0.47	19.19	5,821.0	-68.4	-10.3	-59.4	0.20	-0.16	-14.04	
5,850.0	0.45	22.74	5,846.0	-68.2	-10.2	-59.3	0.14	-0.06	14.20	
5,875.0	0.42	41.13	5,871.0	-68.0	-10.1	-59.2	0.57	-0.12	73.56	
5,881.0	0.72	56.44	5,877.0	-68.0	-10.1	-59.2	5.54	4.98	255.21	
Last SDI Gyro @ 5881 MD										
5,881.6	0.75	57.29	5,877.6	-68.0	-10.1	-59.2	5.54	5.24	141.23	
5,991.0	0.43	30.86	5,967.0	-67.2	-9.3	-58.8	0.38	-0.29	-24.16	
First SDI MWD @ 5991 MD										
6,022.0	0.38	39.79	6,018.0	-67.1	-9.1	-58.7	0.26	-0.16	26.81	
6,053.0	1.90	243.69	6,049.0	-67.2	-9.5	-58.7	7.27	4.90	-503.55	
6,085.0	6.47	237.08	6,080.9	-68.4	-11.5	-59.0	14.34	14.28	-20.66	
6,116.0	11.20	238.08	6,111.5	-71.0	-15.5	-59.9	15.27	15.26	3.23	
6,147.0	15.81	240.25	6,141.6	-74.7	-21.8	-60.9	14.98	14.87	7.00	
6,179.0	19.09	240.91	6,172.2	-79.4	-30.1	-62.2	10.27	10.25	2.06	
6,210.0	20.82	242.75	6,201.3	-84.4	-39.5	-63.3	5.94	5.58	5.94	
6,242.0	23.33	245.93	6,231.0	-89.5	-50.3	-64.0	8.68	7.84	9.94	
6,273.0	26.39	247.55	6,259.1	-94.7	-62.3	-64.2	10.11	9.87	5.23	
6,304.0	29.40	248.09	6,286.5	-100.2	-75.7	-64.2	9.74	9.71	1.74	
6,336.0	32.42	247.11	6,313.9	-106.4	-90.9	-64.3	9.57	9.44	-3.06	
6,367.0	33.33	246.02	6,340.0	-113.1	-106.3	-64.7	3.50	2.94	-3.52	
6,398.0	33.76	251.70	6,365.8	-119.3	-122.3	-64.4	10.22	1.39	18.32	
6,429.0	35.44	259.08	6,391.3	-123.7	-139.3	-62.0	14.56	5.42	23.81	
6,461.0	37.36	264.87	6,417.1	-126.3	-158.1	-57.4	12.29	6.00	18.09	
6,492.0	38.36	269.99	6,441.6	-127.2	-177.1	-51.0	10.63	3.23	16.52	
6,523.0	39.87	275.06	6,465.6	-126.3	-196.6	-42.8	11.41	4.87	16.35	
6,555.0	42.71	280.36	6,489.7	-123.4	-217.5	-32.3	14.07	8.88	16.56	
6,586.0	44.36	283.81	6,512.2	-119.0	-238.4	-20.3	9.33	5.32	11.13	
6,606.0	45.35	286.32	6,526.3	-115.3	-252.0	-11.8	10.15	4.95	12.57	
Middlesex @ 6606 MD										
6,618.0	45.97	287.79	6,534.7	-112.6	-260.2	-6.3	10.15	5.17	12.22	
6,649.0	47.04	291.76	6,556.1	-105.2	-281.4	8.7	9.91	3.45	12.81	
6,681.0	47.75	295.86	6,577.7	-95.6	-302.9	25.6	9.69	2.22	12.81	
6,712.0	49.31	301.34	6,598.3	-84.5	-323.3	43.6	14.17	5.03	17.68	
6,743.0	51.72	305.45	6,618.0	-71.3	-343.2	63.3	12.95	7.77	13.26	
6,775.0	53.18	308.64	6,637.5	-56.1	-363.5	85.1	9.12	4.56	9.97	
6,793.0	54.33	309.98	6,648.1	-46.9	-374.7	97.9	8.76	6.39	7.46	

Received
Office of Oil & Gas

MAY 11 2017

09/15/2017



Company:	Antero	Local Co-ordinate Reference:	Well Devonian Unit 1H
Project:	Doddridge County WV	TVD Reference:	Patterson 347: GL 1171' + KB 25' @ 1195.0usft
Site:	Rock Run Pad:Wentz/Twyford/Devonian	MD Reference:	Patterson 347: GL 1171' + KB 25' @ 1195.0usft
Well:	Devonian Unit 1H	North Reference:	Grid
Wellbore:	Original Wellpath	Survey Calculation Method:	Minimum Curvature
Design:	As Drilled	Database:	Antero NE

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
Burkett @ 6793 MD										
6,806.0	55.17	310.93	6,655.6	-40.0	-382.8	107.3	8.78	6.46	7.28	
6,838.0	57.88	313.75	6,673.3	-22.0	-402.5	131.4	11.21	8.47	8.81	
6,845.0	58.50	314.41	6,677.0	-17.9	-406.8	138.8	11.96	8.86	9.47	
Tully @ 6845 MD										
6,869.0	60.65	316.62	6,689.1	-3.1	-421.3	156.0	11.96	8.96	9.20	
6,900.0	64.60	319.13	6,703.4	17.3	-439.7	181.8	14.63	12.74	8.10	
6,930.0	68.71	321.09	6,715.3	38.5	-457.4	208.1	14.97	13.72	6.54	
Marcellus @ 6930 MD										
6,932.0	68.99	321.22	6,716.0	39.9	-458.5	209.9	14.97	13.76	6.34	
6,963.0	73.44	322.51	6,726.0	63.0	-476.7	238.1	14.89	14.35	4.16	
6,994.0	76.94	325.76	6,733.9	87.3	-494.2	267.2	15.17	11.29	10.48	
7,026.0	79.60	328.73	6,740.4	113.6	-511.1	298.0	12.32	8.31	9.28	
7,057.0	82.20	330.89	6,745.3	140.1	-526.5	328.3	10.85	8.39	6.97	
7,087.0	84.83	332.90	6,748.7	186.4	-540.6	357.9	11.01	8.77	6.70	
7,123.0	88.93	336.13	6,750.7	198.8	-556.0	393.8	14.49	11.39	8.97	
7,155.0	91.04	337.39	6,750.7	228.2	-588.7	425.8	7.68	6.59	3.94	
7,249.0	92.35	337.95	6,747.9	315.1	-604.4	519.7	1.52	1.39	0.60	
7,311.0	90.74	338.35	6,746.2	372.6	-627.4	581.7	2.68	-2.60	0.65	
7,343.0	90.80	338.87	6,745.8	402.4	-639.1	613.7	1.64	0.19	1.63	
7,437.0	89.77	340.87	6,745.3	490.7	-671.4	707.6	2.39	-1.10	2.13	
7,531.0	90.17	340.79	6,745.4	579.5	-702.3	801.5	0.43	0.43	-0.09	
7,625.0	91.34	340.41	6,744.1	658.1	-733.5	895.4	1.31	1.24	-0.40	
7,719.0	90.50	336.11	6,742.6	755.4	-758.3	989.4	4.66	-0.89	-4.57	
7,813.0	90.67	334.91	6,741.7	841.0	-807.3	1,063.3	1.29	0.18	-1.28	
7,907.0	91.14	334.20	6,740.2	925.8	-847.7	1,177.1	0.91	0.50	-0.76	
8,001.0	90.17	337.10	6,739.1	1,011.4	-886.4	1,271.0	3.25	-1.03	3.09	
8,095.0	90.70	335.57	6,738.4	1,097.5	-924.2	1,365.0	1.72	0.56	-1.63	
8,189.0	90.50	338.51	6,737.4	1,184.1	-960.6	1,458.9	3.13	-0.21	3.13	
8,283.0	90.74	337.00	6,736.4	1,271.1	-996.4	1,552.9	1.63	0.26	-1.61	
8,377.0	89.20	340.32	6,736.6	1,356.6	-1,030.6	1,646.9	3.69	-1.64	3.53	
8,471.0	90.20	341.62	6,736.9	1,447.5	-1,061.3	1,740.8	1.74	1.06	1.38	
8,566.0	91.04	342.30	6,735.9	1,537.8	-1,090.7	1,835.5	1.14	0.88	0.72	
8,660.0	90.84	339.14	6,734.3	1,626.5	-1,121.7	1,929.4	3.37	-0.21	-3.36	
8,754.0	90.54	339.93	6,733.2	1,714.6	-1,154.6	2,023.3	0.90	-0.32	0.84	
8,848.0	90.54	343.71	6,732.3	1,803.8	-1,183.9	2,117.1	4.02	0.00	4.02	
8,942.0	90.91	339.89	6,731.1	1,893.1	-1,213.2	2,210.8	4.08	0.39	-4.06	
9,037.0	90.40	334.32	6,730.1	1,980.6	-1,250.2	2,305.6	5.89	-0.54	-5.86	
9,131.0	90.03	333.42	6,729.7	2,065.0	-1,291.6	2,399.6	1.04	-0.39	-0.96	
9,225.0	89.73	337.42	6,729.9	2,150.4	-1,330.7	2,493.4	4.27	-0.32	4.26	
9,319.0	91.95	338.42	6,728.5	2,237.5	-1,366.0	2,587.4	2.59	2.36	1.06	
9,413.0	91.14	337.26	6,726.0	2,324.6	-1,401.4	2,681.4	1.50	-0.86	-1.23	
9,507.0	89.87	338.77	6,725.2	2,411.7	-1,436.6	2,775.4	2.10	-1.35	1.61	
9,602.0	90.37	335.29	6,725.0	2,499.2	-1,473.7	2,870.4	3.70	0.53	-3.66	

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Survey Report



Company:	Antero	Local Co-ordinate Reference:	Well Devonian Unit 1H
Project:	Doddrige County WV	TVD Reference:	Patterson 347: GL 1171' + KB 25' @ 1196.0usft
Site:	Rock Run Pad:Wentz/Twyford/Devonian	MD Reference:	Patterson 347: GL 1171' + KB 25' @ 1196.0usft
Well:	Devonian Unit 1H	North Reference:	Grid
Wellbore:	Original Wellpath	Survey Calculation Method:	Minimum Curvature
Design:	As Drilled	Database:	Antero NE

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
9,696.0	91.14	336.16	6,723.7	2,584.8	-1,512.3	2,964.3	1.24	0.82	0.93
9,790.0	91.34	334.89	6,721.7	2,670.4	-1,551.3	3,058.2	1.37	0.21	-1.35
9,884.0	90.47	339.93	6,720.2	2,757.1	-1,587.4	3,152.1	5.34	-0.93	5.28
9,978.0	90.30	340.20	6,719.6	2,845.4	-1,619.6	3,246.1	0.43	-0.16	0.39
10,072.0	89.93	337.16	6,719.4	2,933.0	-1,653.7	3,340.0	3.26	-0.39	-3.23
10,166.0	90.80	338.86	6,718.8	3,020.1	-1,688.9	3,434.0	2.03	0.93	1.81
10,261.0	91.11	338.03	6,717.2	3,108.5	-1,723.8	3,529.0	0.93	0.33	-0.67
10,355.0	91.78	338.25	6,714.8	3,195.7	-1,758.8	3,623.0	0.75	0.71	0.23
10,449.0	90.97	336.17	6,712.6	3,282.3	-1,795.2	3,717.0	2.37	-0.86	-2.21
10,543.0	90.50	335.10	6,711.4	3,368.0	-1,834.0	3,810.9	1.24	-0.50	-1.14
10,637.0	90.37	334.61	6,710.7	3,453.0	-1,873.9	3,904.7	0.54	-0.14	-0.52
10,732.0	90.70	337.12	6,709.8	3,539.7	-1,912.8	3,999.7	2.66	0.35	2.64
10,826.0	91.11	337.47	6,708.3	3,626.4	-1,949.0	4,093.7	0.57	0.44	0.37
10,920.0	90.91	336.41	6,706.6	3,712.9	-1,985.9	4,187.6	1.15	-0.21	-1.13
11,014.0	90.84	335.82	6,705.2	3,798.8	-2,023.9	4,281.6	0.63	-0.07	-0.63
11,108.0	90.03	338.34	6,704.5	3,885.4	-2,060.5	4,375.6	2.82	-0.86	2.68
11,202.0	89.80	339.80	6,704.6	3,973.2	-2,094.1	4,469.5	1.57	-0.24	1.55
11,296.0	90.07	342.32	6,704.7	4,062.1	-2,124.6	4,563.4	2.70	0.29	2.68
11,390.0	90.03	339.93	6,704.6	4,151.1	-2,155.0	4,657.2	2.54	-0.04	-2.54
11,484.0	88.96	336.03	6,705.5	4,238.2	-2,190.2	4,751.2	4.30	-1.14	-4.15
11,578.0	88.35	334.89	6,707.7	4,323.7	-2,229.3	4,845.1	1.38	-0.65	-1.21
11,672.0	90.34	338.75	6,708.7	4,410.0	-2,266.3	4,939.0	4.62	2.12	4.11
11,766.0	90.64	338.44	6,707.9	4,497.6	-2,300.6	5,033.0	0.46	0.32	-0.33
11,860.0	90.70	338.37	6,706.8	4,585.0	-2,335.2	5,127.0	0.10	0.06	-0.07
11,954.0	90.07	338.14	6,706.2	4,672.3	-2,370.0	5,221.0	0.71	-0.67	-0.24
12,049.0	89.76	337.14	6,706.4	4,760.1	-2,406.1	5,316.0	1.10	-0.33	-1.05
12,143.0	89.29	336.12	6,707.1	4,846.4	-2,443.4	5,410.0	1.19	-0.50	-1.09
12,237.0	90.03	335.71	6,707.7	4,932.2	-2,481.8	5,503.9	0.90	0.79	-0.44
12,332.0	90.50	336.06	6,707.3	5,018.9	-2,520.6	5,598.9	0.62	0.49	0.37
12,426.0	90.80	335.42	6,706.2	5,104.6	-2,559.2	5,692.8	0.75	0.32	-0.68
12,520.0	89.50	337.26	6,705.9	5,190.7	-2,596.9	5,786.8	2.40	-1.38	1.96
12,614.0	89.43	338.75	6,706.8	5,277.9	-2,632.1	5,880.8	1.59	-0.07	1.59
12,708.0	89.90	338.73	6,707.4	5,365.5	-2,666.2	5,974.7	0.50	0.50	-0.02
12,802.0	90.10	336.70	6,707.4	5,452.4	-2,701.9	6,068.7	2.17	0.21	-2.16
12,897.0	89.50	340.78	6,707.7	5,541.0	-2,736.3	6,163.7	4.34	-0.63	4.29
12,991.0	90.10	337.76	6,708.0	5,628.9	-2,769.6	6,257.7	3.28	0.64	-3.21
13,085.0	90.20	339.82	6,707.8	5,716.5	-2,803.6	6,351.6	2.19	0.11	2.19
13,179.0	90.57	338.99	6,707.1	5,804.5	-2,836.6	6,445.6	0.97	0.39	-0.88
13,273.0	90.77	337.37	6,706.1	5,891.7	-2,871.6	6,539.6	1.74	0.21	-1.72
13,367.0	88.86	336.14	6,706.4	5,978.1	-2,906.7	6,633.6	2.42	-2.03	-1.31
13,462.0	89.20	338.39	6,708.0	6,065.7	-2,945.4	6,728.5	2.39	0.36	2.37
13,556.0	90.34	337.02	6,708.3	6,152.7	-2,981.0	6,822.5	1.90	1.21	-1.46
13,650.0	90.77	335.46	6,707.4	6,238.7	-3,016.9	6,916.5	1.72	0.46	-1.66

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Scientific Drilling International
Survey Report

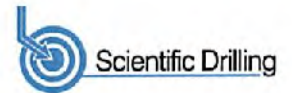


Company:	Antero	Local Co-ordinate Reference:	Well Devonian Unit 1H
Project:	Doddridge County WV	TVD Reference:	Patterson 347: GL 1171' + KB 25' @ 1196.0usft
Site:	Rock Run Pad:Wentz/Twyford/Devonian	MD Reference:	Patterson 347: GL 1171' + KB 25' @ 1196.0usft
Well:	Devonian Unit 1H	North Reference:	Grid
Wellbore:	Original Wellpath	Survey Calculation Method:	Minimum Curvature
Design:	As Drilled	Database:	Antero NE

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
13,744.0	90.54	338.38	6,705.4	6,325.1	-3,055.7	7,010.5	3.12	-0.24	3.11
13,838.0	89.13	339.49	6,705.6	6,412.9	-3,089.5	7,104.4	1.91	-1.50	1.18
13,933.0	89.40	338.69	6,707.8	6,501.6	-3,123.4	7,199.4	0.89	0.28	-0.84
14,027.0	89.93	337.60	6,708.4	6,588.8	-3,158.4	7,293.4	1.29	0.56	-1.16
14,121.0	89.40	341.90	6,708.9	6,677.0	-3,191.0	7,387.3	4.61	-0.56	4.57
14,215.0	90.10	346.89	6,709.4	6,767.5	-3,216.2	7,480.7	5.36	0.74	5.31
14,309.0	89.83	343.17	6,709.4	6,858.3	-3,240.5	7,573.9	3.97	-0.29	-3.96
14,404.0	89.87	341.30	6,709.7	6,948.8	-3,269.5	7,668.7	1.97	0.04	-1.97
14,498.0	88.56	337.11	6,710.9	7,036.6	-3,302.9	7,762.6	4.67	-1.39	-4.46
14,592.0	89.43	336.61	6,712.6	7,123.0	-3,339.8	7,858.6	1.07	0.93	-0.53
14,686.0	89.60	335.96	6,713.4	7,209.1	-3,377.6	7,950.5	0.69	0.18	-0.67
14,780.0	90.30	334.59	6,713.5	7,294.5	-3,416.9	8,044.4	1.66	0.74	-1.48
14,875.0	88.49	335.51	6,714.5	7,380.6	-3,456.9	8,139.3	2.14	-1.91	0.97
14,969.0	89.70	335.09	6,716.0	7,466.0	-3,496.2	8,233.2	1.36	1.29	-0.45
15,063.0	88.82	337.48	6,717.2	7,552.1	-3,534.0	8,327.2	2.71	-0.94	2.54
15,157.0	90.37	338.13	6,717.8	7,639.1	-3,569.5	8,421.1	1.79	1.65	0.69
15,251.0	89.73	338.00	6,717.8	7,726.3	-3,604.6	8,515.1	0.69	-0.68	-0.14
15,344.0	90.97	339.31	6,717.2	7,812.9	-3,638.5	8,608.1	1.94	1.33	1.41
15,438.0	90.47	336.11	6,716.0	7,899.9	-3,674.1	8,702.1	3.45	-0.53	-3.40
15,532.0	91.04	337.42	6,714.8	7,986.2	-3,711.2	8,796.1	1.52	0.61	1.39
15,626.0	89.06	335.92	6,714.7	8,072.5	-3,748.4	8,890.1	2.84	-2.11	-1.60
15,721.0	89.33	335.85	6,716.0	8,159.2	-3,787.2	8,985.0	0.29	0.28	-0.07
15,815.0	89.80	334.43	6,716.7	8,244.5	-3,826.8	9,078.9	1.59	0.50	-1.51
15,909.0	90.54	336.49	6,716.5	8,330.0	-3,865.8	9,172.8	2.33	0.79	2.19
16,003.0	89.13	336.71	6,716.7	8,416.3	-3,903.1	9,266.8	1.52	-1.50	0.23
16,097.0	89.40	337.74	6,717.9	8,502.9	-3,939.5	9,360.8	1.13	0.29	1.10
16,192.0	89.97	337.97	6,718.5	8,590.9	-3,975.3	9,455.7	0.65	0.60	0.24
16,286.0	90.13	338.61	6,718.4	8,678.3	-4,010.1	9,549.7	0.70	0.17	0.68
16,380.0	91.34	337.88	6,717.2	8,765.6	-4,044.9	9,643.7	1.50	1.29	-0.78
16,474.0	90.30	338.61	6,715.8	8,852.9	-4,079.6	9,737.7	1.35	-1.11	0.78
16,569.0	91.21	339.18	6,714.6	8,941.5	-4,114.0	9,832.7	1.13	0.96	0.60
16,663.0	89.66	336.66	6,713.9	9,028.6	-4,149.3	9,926.7	3.15	-1.65	-2.68
16,757.0	89.76	334.83	6,714.3	9,114.3	-4,187.9	10,020.6	1.95	0.11	-1.95
16,851.0	89.83	336.76	6,714.7	9,200.0	-4,226.5	10,114.5	2.05	0.07	2.05
16,945.0	90.40	338.03	6,714.5	9,286.8	-4,262.6	10,208.5	1.48	0.61	1.35
17,040.0	90.74	335.72	6,713.5	9,374.1	-4,299.9	10,303.5	2.46	0.36	-2.43
17,134.0	90.91	335.72	6,712.2	9,459.8	-4,338.5	10,397.4	0.18	0.18	0.00
17,228.0	89.63	337.27	6,711.7	9,546.0	-4,376.0	10,491.4	2.14	-1.36	1.65
17,322.0	90.60	343.99	6,711.6	9,634.6	-4,407.2	10,585.2	7.22	1.03	7.15
17,417.0	90.84	344.70	6,710.4	9,726.1	-4,432.8	10,679.6	0.79	0.25	0.75
17,511.0	90.13	342.11	6,709.6	9,816.1	-4,459.7	10,773.1	2.86	-0.78	-2.76
17,605.0	90.54	340.13	6,709.0	9,905.1	-4,490.1	10,867.0	2.15	0.44	-2.11
17,699.0	90.47	337.46	6,708.2	9,992.7	-4,524.1	10,961.0	2.84	-0.07	-2.84
17,793.0	89.83	333.63	6,707.9	10,078.2	-4,563.0	11,054.9	4.13	-0.68	-4.07

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Company:	Antero	Local Co-ordinate Reference:	Well Devonian Unit 1H
Project:	Doddridge County WV	TVD Reference:	Patterson 347: GL 1171' + KB 25' @ 1196.0usft
Site:	Rock Run Pad:Wentz/Twyford/Devonian	MD Reference:	Patterson 347: GL 1171' + KB 25' @ 1196.0usft
Well:	Devonian Unit 1H	North Reference:	Grid
Wellbore:	Original Wellpath	Survey Calculation Method:	Minimum Curvature
Design:	As Drilled	Database:	Antero NE

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
17,887.0	89.97	332.78	6,708.1	10,162.2	-4,605.3	11,148.5	0.92	0.15	-0.90
17,901.0	89.87	332.04	6,708.1	10,174.6	-4,611.8	11,162.5	5.32	-0.71	-5.27
Last SDI MWD @ 17901 MD									
17,961.0	89.87	332.04	6,708.3	10,227.6	-4,640.0	11,222.2	0.00	0.00	0.00
Projection To Bit @ 17961 MD / 6708 TVD									

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
6,606.0	6,526.3	Middlesex @ 6606 MD		0.00	
6,793.0	6,646.1	Burkett @ 6793 MD		0.00	
6,845.0	6,677.0	Tully @ 6845 MD		0.00	
6,930.0	6,715.3	Marcellus @ 6930 MD		0.00	

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
25.0	25.0	0.1	0.0	First SDI Gyro @ 25 MD
5,881.0	5,877.0	-88.0	-10.1	Last SDI Gyro @ 5881 MD
5,991.0	5,987.0	-67.2	-9.3	First SDI MWD @ 5991 MD
17,901.0	6,708.1	10,174.6	-4,811.8	Last SDI MWD @ 17901 MD
17,961.0	6,708.3	10,227.6	-4,640.0	Projection To Bit @ 17961 MD / 6708 TVD

Checked By: _____ Approved By: _____ Date: _____

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